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A MULTIPLE-BASELINE ANALYSIS OF SOCIAL-SKILLS TRAINING IN CHRONIC SCHIZOPHRENICS[1]

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Social-skills training was applied to two male chronic schizophrenics. Component behaviors of social skill requiring modification were identified for each patient by rating videotapes of role-played interactions. Training involved instructions and feedback for one subject and instructions, feedback, and modelling for the second. Target behaviors were treated sequentially and cumulatively in a multiple-baseline format. Training was applied for both positive and negative assertion and for situations involving males and females. The results were positive for all behaviors for both patients. Follow-ups at 2, 4, 6, and 8 weeks after training indicated that most effects were maintained at near-treatment levels.

DESCRIPTORS: social skills, multiple baseline, psychiatric patients, chronic schizophrenics

In recent years, social-skill training procedures have enjoyed widespread application. The usefulness of these techniques has been documented with unassertive college students (*e.g.,* Kazdin, 1974; McFall and Marston, 1970), persons who evidence dating inhibitions (*e.g.,* Curran, 1975; MacDonald, Lindquist, Kramer, McGrath, and Rhyne, 1975), and psychiatric in- and outpatients who evidence marked social-skill impairment (*e.g.,* Goldsmith and McFall, 1975; Hersen, Eisler, and Miller, 1974; Percell, Berwick, and Beigel, 1974).

The most active component techniques (*i.e.,* behavior rehearsal, coaching, modelling, and performance feedback) of social-skills training for effecting behavioral change in unassertive college students have been identified by McFall and his colleagues (McFall and Lillesand, 1971; McFall and Marston, 1970; McFall and Twentyman, 1973) in an extended series of short-term analogue treatment investigations. Similarly, the most effective component techniques (*i.e.,* instructions and modelling) of social-skills training for bringing about behavioral change in unassertive psychiatric patients have been ascertained in a parallel series of short-term analogue treatment studies by Hersen, Eisler, and Miller (Eisler, Hersen, and Miller, 1973; Hersen, Eisler, and Miller, 1974; Hersen, Eisler, Miller, Johnson, and Pinkston, 1973) and by Goldstein, Martens, Hubben, van Belle, Schaaf, Wiersma, and Goedhart (1973).

In addition to the analogue studies with psychiatric subjects, several demonstrations of the clinical application of social-skills training with patient populations have appeared in the literature (Blanchard and Hersen, *in press;* Eisler, Hersen, and Miller, 1974; Eisler, Miller, Hersen, and Alford, 1974; Foy, Eisler, and Pinkston, 1975; Hersen, Turner, Edelstein, and Pinkston, *in press;* Miller and Hersen, *in press;* Wallace, Teigen, Liberman, and Baker, 1973). Nevertheless, the clinical viability of the approach has not been sufficiently determined (Hersen and Bellack, *in press a, b*). In a number of these studies (*e.g.,* Blanchard and Hersen, *in press;* Miller and Hersen, *in press;* Wallace *et al.,* 1973) several different treatments were applied concurrently, thus preventing an analysis of the specific contribution of skill training. In two of the studies (Eisler, Hersen, and Miller,

[1]Reprints may be obtained from Michel Hersen, Director of Partial Hospitalization, Department of Psychiatry, Western Psychiatric Institute and Clinic, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania 15261.

1974; Foy *et al., in press*), although experimental analysis designs were used, treatment time was brief. Finally, in only one study (Hersen *et al.,* 1975) were the effects of skill training examined in a chronic schizophrenic patient. Despite the overall clinical success with this patient, the sequential initiation of phenothiazines, token economy, social-skills training, and vocational counselling do not permit clear-cut conclusions, despite the use of a multiple-baseline strategy.

In the present study, the effects of social-skills training with two chronic schizophrenics were evaluated using a multiple-baseline design across behaviors. Skills training focused on the expression of both positive and negative feelings to both male and female role models during role-played encounters. In addition, multiple follow-ups over an eight-week posttreatment period were conducted to assess durability of training effects.

METHOD

Subjects

Both subjects were patients in the Partial Hospitalization Service (PHS) of Western Psychiatric Institute and Clinic, Department of Psychiatry, University of Pittsburgh School of Medicine (see Hersen and Luber, *in press*). Subject 1 was a 19-yr-old, single, white male with a diagnosis of schizophrenia, catatonic type, with paranoid ideation. At the time of admission he was delusional, evidenced flat affect, and appeared particularly anxious whenever interpersonal interactions were required. Withdrawal and other psychotic symptomatology had progressed for 4 yr. On admission, the patient isolated himself from staff and patients. Although he attended scheduled activities, participation was minimal. In traditional group psychotherapy he never initiated conversation, responded only when directly queried, and avoided eye contact when responding. During his stay in the PHS the patient received: Trilafon 32 mg., H.S., and Cogentin 2 mg., H.S.

Subject 2 was a 27-yr-old, single, white male who was admitted to the PHS with a diagnosis of schizophrenia, chronic undifferentiated type. At the time of admission (his second Day Hospital admission) he was withdrawn, extremely anxious, avoided eye contact, and frequently stuttered. He rarely initiated or responded to conversation with staff or patients, whether in or out of scheduled activities. Throughout his stay in the PHS the patient received: Trilafon 16 mg., H.S., 2 mg., q.i.d., and Cogentin 2 mg., b.i.d.

Setting

The behavioral assessment of subjects' responses to role-played interactions was conducted in a videotape studio arranged in a comfortable living room setting. Female and male role models sat next to the subject on a small two-seat sofa and provided prompts to facilitate responses. An adjoining control room separated by a one-way mirror contained videotape recording equipment and several videotape monitors. Role-played scenes were narrated by a research assistant (therapist) over the intercom from the control room.

Behavioral Assessment

Previous research has demonstrated that both overall level of assertiveness and more molecular skill deficits could be identified on the basis of role-played responses to standardized situations. Psychiatric patients judged to be high and low in overall assertiveness have been differentiated on several verbal and nonverbal behaviors (Eisler, Hersen, Miller, and Blanchard, 1975; Eisler, Miller, and Hersen, 1973). Eight role-played situations derived from the Behavioral Assertiveness Test (Eisler *et al.,* 1973) and the Behavioral Assertiveness Test-Revised (Eisler *et al.,* 1975) were, therefore, selected as the focus of treatment for each subject. One-half of the eight scenes selected involved the expression of positive feelings, while the remaining half involved expression of negative feelings. In addition, one-half of each subset was directed toward male role models and one-half toward female

role models. Two examples of the scenes are presented below.[2]

1. *Narrator:* You have been working on a difficult job all week. Your boss comes over to you with a very pleased smile on her face. *Role Model Prompt:* "That's a very good job you've done. I'm going to give you a raise next week."

2. *Narrator:* You had a very busy day at work and are tired. Your boss comes in and asks you to stay late for the third time this week. You really feel you would like to go home tonight. *Role Model Prompt:* "I'm leaving now. Would you mind staying late again tonight and finishing this work for me?"

Target Behaviors

Based on retrospective ratings made from baseline assessments, a number of target behaviors occurring at low rates (high rate for number of compliances) were selected. Target behaviors for Subject 1 were as follows: ratio of eye contact to speech duration, speech duration, number of requests, and number of compliances. The following were selected for Subject 2: ratio of eye contact to speech duration, ratio of speech disruptions to words spoken, number of appropriate smiles, number of compliances, and appropriate affect.

Ratio of eye contact to speech duration. The total length of time (in seconds) that the subject looked directly at his interpersonal partner while responding to the prompt was recorded. The ratio was computed by dividing the total length of duration of eye contact (in seconds) by the total duration of speech.

Speech duration. Length of time (in seconds) that the subject spoke to his partner was recorded for each scene. Speech pauses longer than 3 sec terminated timing until the subject began speaking again.

Number of requests. Verbal content requesting new behavior from the interpersonal partner was scored on an occurrence or nonoccurrence basis for each scene. Responses scored in this category required more than mere noncompliance. The subject had to show evidence that he wanted his partner to change his/her behavior (*e.g.,* he had to request his boss to ask him to stay late some other night).

Number of compliances. Verbal compliance was rated on an occurrence or nonoccurrence basis for each negative scene. Compliance was scored if the subject did not resist his partner's position (*e.g.,* if he agreed to stay and work late for the boss).

Ratio of speech disruptions to words spoken. Frequency of speech disruptions categorized by Mahl (1956) including pauses, repetitions, stutters, and expletives such as "ah", "oh", "um" *etc.,* were recorded for each scene. The ratio was computed by dividing the number of speech disruptions (disturbances) by the total number of words spoken.

Number of appropriate smiles. Smiles were recorded on an occurrence or nonoccurrence basis for *each positive scene* from delivery of prompt to termination of response. A smile was defined as a 45-degree crease in the cheek with teeth showing.

Appropriate affect. Subject's affect was scored on a five-point scale (1 = a very flat, unemotional tone of voice and absence of appropriate facial and physical gestures; 5 = a full and lively intonation [emotional expressiveness] with corresponding facial and physical gestures appropriate to each situation).

Overall assertiveness. After all previous behaviors were rated, two additional judges who were not familiar with the purposes of the study were asked to rate the subjects' behavior on overall assertiveness, using a five-point scale (1 = "very unassertive"; 5 = "very assertive"). The ratings were performed independently after the judges had familiarized themselves with Wolpe's (1969) definition of "hostile" and "commendatory" assertiveness.

Training

Assessment and training procedures were similar for both subjects. Before baseline assess-

[2]The complete set of scenes is available from the authors on request.

ment, the purpose and nature of the treatment procedures were explained to the subjects. Three videotaped baseline probes were conducted for Subject 1 and four probes were conducted for Subject 2; probes for both subjects were conducted in a one-week period.

Training was administered in a videotape studio by a male or female B.A.-level research assistant. The subject and two role models were seated in the studio, which contained a sofa and an easy chair. The therapist-experimenter observed the interaction on a videotape monitor in an adjoining control room and communicated to the subject over the intercom. Training scenes were presented one at a time in randomized order in each session. The therapist first described the scene, the appropriate role-model (male or female) then delivered the prompt, and the subject subsequently responded to the role model. The therapist observed the response, and provided immediate feedback relative to the applicable target behavior(s). When appropriate, instructions geared toward increasing or decreasing rates of targeted behaviors were also provided. Positive aspects of the subject's performance were focussed on whenever possible. A typical therapist response was: "That was better, but you still looked away at the end. This time try to look at Jim for the whole time." In addition, for Subject 2, appropriate responses were modelled by the role model (at the direction of the therapist). This sequence (role playing and feedback, *etc.*) was repeated until some improvement in responding was noted. The next scene was then presented with the same format. Training was thus provided on *each* scene during *each* session.

Following baseline, Subject 1 received four weeks of social-skills training (instructions and feedback) consisting of five 20- to 40-min sessions per week. Consistent with multiple-baseline strategies, training was directed sequentially and cumulatively to the four target behaviors over the four-week period. Specifically, during the first week of training, attention was directed toward increasing the ratio of eye contact to speech duration. In the second week, the primary focus involved speech duration, with attention still directed to maintaining increases in the first target behavior (ratio of eye contact to speech duration). In the third and fourth week respectively, primary attention was directed toward increasing number of requests and decreasing number of compliances. Due to the specific content of the scenes requiring the expression of positive feelings, training on the four positive scenes was restricted to increasing the ratio of eye contact to speech duration and increasing speech duration.

Following baseline assessment, Subject 2 received five weeks of social-skills training (instructions, feedback, and modelling) consisting of five to six 30- to 90-min sessions per week. Due to the chronicity of the disorder in Subject 2, a longer period of treatment, longer training sessions, and an additional treatment modality (*i.e.,* modelling) were provided. Also, as with Subject 1, due to the specific content of the scenes requiring expression of positive feelings, training on the four positive scenes was not directed to modifying compliances. Conversely, training on the four negative scenes was not directed to number of appropriate smiles.

Effects were evaluated independently of treatment sessions. Three probe sessions were conducted each week during the four-week training period. In addition, follow-up probes were obtained at 2, 4, 6, and 8 weeks after training.

RESULTS

Two judges independently rated all videotapes retrospectively for Subject 1.[3] For Subject 2, one judge rated all tapes retrospectively, whereas the second judge rated approximately one-half of the tapes per phase. Pearson Product-Moment correlations were calculated (jointly for both subjects across all phases) for ratio of eye contact to speech duration ($r = 0.94$), speech

[3]The authors thank Margie Leiberton, Barbara Pessey, Joan Romano, Marcia Schwartz, Joe Thomas, John Watts, and Martin Williams for their participation in this study.

duration ($r = 0.99$), ratio of speech disruptions to words spoken ($r = 0.95$), appropriate affect ($r = 0.97$), and overall assertiveness ($r = 0.89$). Two different judges independently rated overall assertiveness for both subjects to avoid contamination of ratings.

Ratings for number of requests, number of compliances, and number of appropriate smiles were judged on a dichotomous occurrence-nonoccurrence basis and presented as percentage of agreement between raters. Percentage agreement was 100% in all three cases based on instances where *only occurrence* of the behavior was recorded (see Bijou, Peterson, and Ault, 1968; Bijou, Peterson, Harris, Allen, and Johnston, 1969; Hersen and Barlow, *in press,* Chapter 4). Where a zero occurrence of the targeted behavior (*e.g.,* compliance) was established as the desired criterion, percentage agreement was calculated on the basis of agreement on nonoccurrences.

The results of training are presented in Figure 1 (for Subject 1) and Figure 2 (for Subject 2). No differences were observed (for either subject) in responses to male and female items or to positive and negative items. Therefore, data are presented collapsed across scenes. Treatment was effective for both subejcts. Changes were manifested in the desired direction for all be-

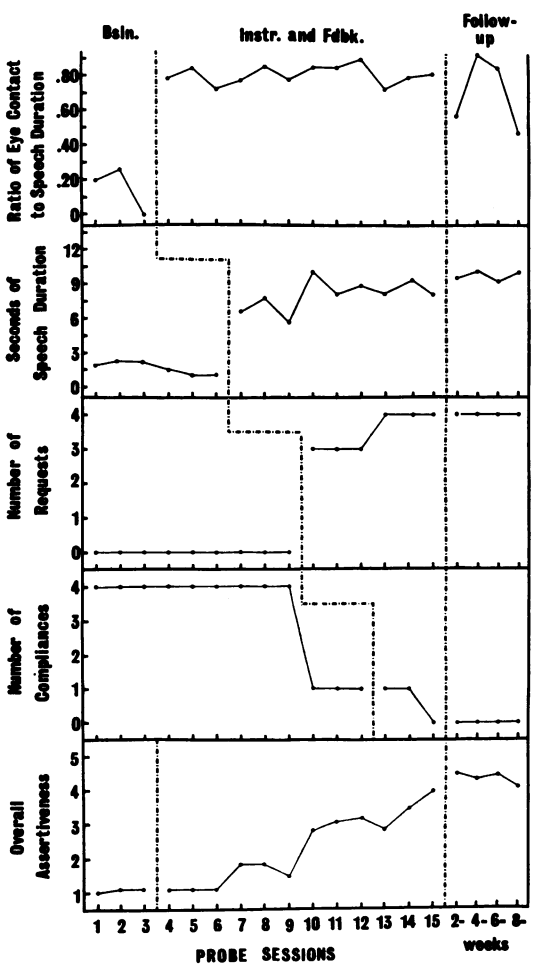

Fig. 1. Probe sessions during baseline, treatment, and follow-ups for Subject 1. Data are presented in blocks of eight scenes.

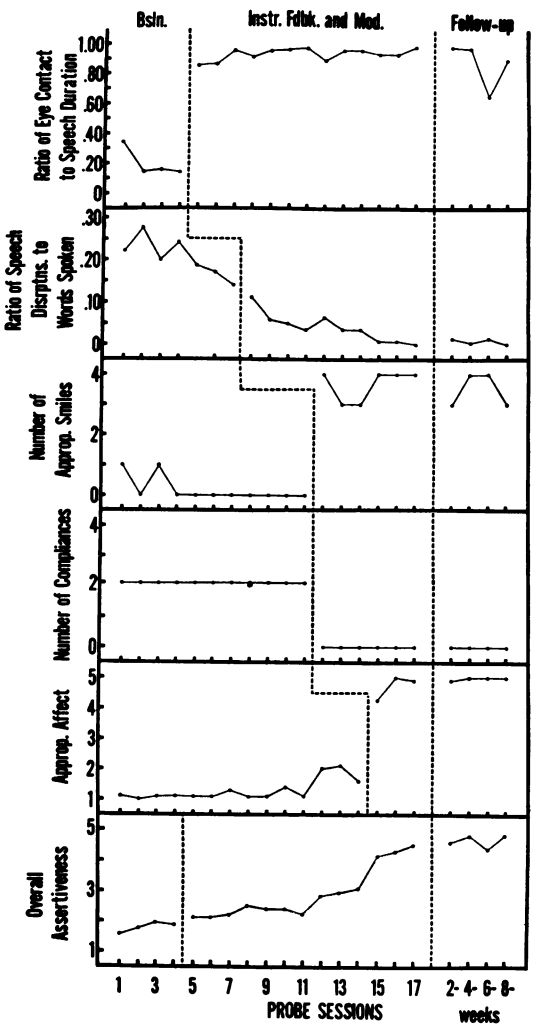

Fig. 2. Probe sessions during baseline, treatment, and follow-ups for Subject 2. Data are presented in blocks of eight scenes.

haviors and for ratings of overall assertiveness. All baselines appeared to be independent in response to training, except for Number of Compliances for Subject 1 and Speech Disruptions for Subject 2. Ratings of Overall Assertiveness increased gradually and consistently across trials. This pattern suggests that the component behaviors did, in fact, comprise the overall behavior pattern.

Behavior changes were maintained during the follow-up period, with the exception of eye contact for Subject 1 who showed a decrease in eye contact from treatment levels at the first follow-up probe. Immediately following the probe, he was given a booster treatment session. This session was identical to earlier training sessions for eye contact, including feedback and instructions for each training scene. Level of eye contact was increased at the next probe, but continued to diminish at subsequent follow-up probes.

DISCUSSION

For both patients, social-skills training was effective. Changes in both component behaviors and overall assertiveness were consistent for positive and negative assertion and for situations involving males and females. For the most part, the effects of treatment persisted across a two-month posttreatment interval.

It is of special interest that both patients were chronic schizophrenics. As stated, the receptivity of schizophrenics to this form of intervention had not previously been determined. However, these results indicate that social-skills training can be successfully applied with these individuals. Several aspects of the training procedure as applied here appear to be especially relevant in this regard. First, the multiple-baseline design entailed focus on single, discrete behavioral components during training sessions. Given the schizophrenic's frequently reported inability effectively to manage complex stimulus inputs (Salzinger, 1973), this restricted focus probably facilitated the response to training. A second factor pertains to the amount of training provided. Training was conducted daily for four to five weeks, and included several repetitions in each session. While follow-up results suggested that this was generally sufficient, even more training may have been required for eye contact. A third factor concerns the patients themselves. Training did not involve any consequences for behavior other than social approval on the part of the therapists and models. Social reinforcement was effective for these two patients, but may not be sufficient for all schizophrenics. Furthermore, both patients expressed significant and continuous agreement with the goals of training (*e.g.,* increased interpersonal effectiveness). Both patient involvement and sources of reinforcement must be considered in the selection of patients and structure of treatment if training is to be effective.

The foremost question raised by these findings pertains to the degree of generalization of behavior changes. Generalization here refers to both the breadth of the changes and their stability. Future research should examine the extent to which such training transfers to other, novel (and/or untrained) role-played situations, other role models, and to *in vivo* (extratherapeutic) behavior. The latter is especially critical. While the nature of the subjects and the extent of training remove this study from the typical "analogue" category, the absence of *in vivo* measures limits to some extent the conclusions that may be drawn.

The follow-up results were quite encouraging, but longer term follow-ups are obviously required in future investigations. Finally, these results do not suggest that social skills training is *ipso facto* appropriate and effective for all chronic "schizophrenics". However, they do indicate that the approach can be used effectively with some members of this clinical population.

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